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Joint
Computer-aided Acquisition
and Logistic Support (JCALS)
CALS Technology Center (CTC)

**Joint Engineering Data Managment Information Control Systems/
Computer-Assisted Data Acceptance
(JEDMICS/CADA)
Computer Operations Manual**

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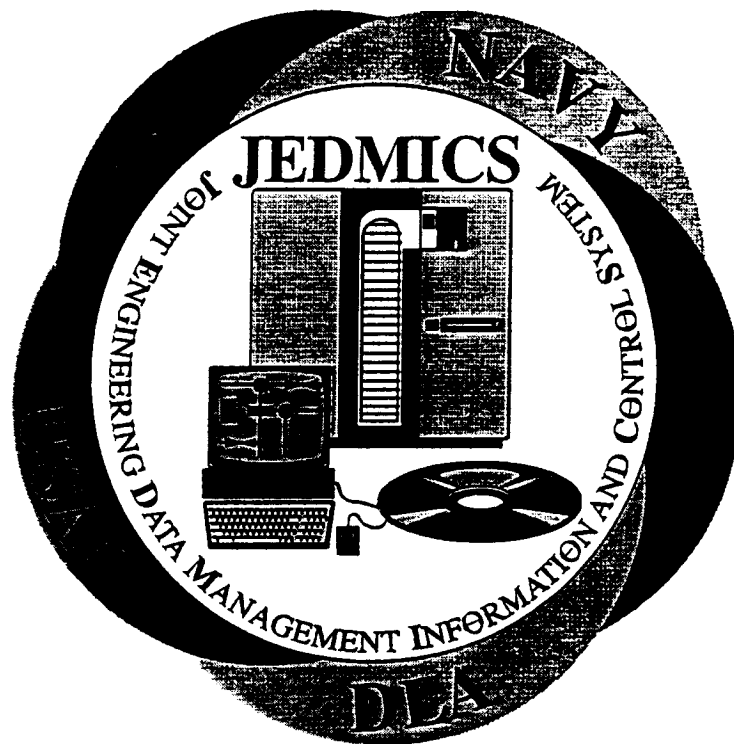
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*Joint Engineering Data Management Information
And Control System/
Computer-Assisted Data Acceptance
(JEDMICS/CADA)*

*Joint Engineering Data Managment
Information Control Systems/
Computer-Assisted Data Acceptance
(JEDMICS/CADA)
Computer Operations Manual*



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DISCLAIMER

The use of trade names in this document and/or discussion of a particular product does not constitute an endorsement or approval of the use of such commercial equipment. This document may not be cited for the purpose of advertisement.

*Joint Engineering Data Management Information Control Systems/Computer-Assisted Data Acceptance
(JEDMICS/CADA) Computer Operations Manual*

Section 1 GENERAL

1.1 Purpose of the Computer Operation Manual

The objective of the Joint Engineering Data Management Information Control Systems/Computer Operation Manual for the Computer Assisted Data Acceptance Tools (JEDMICS/CADA) (Contract Number: DAAB07-93-D-T001) is to provide computer control personnel and computer operators in an information processing center, with a detailed operational description of the system and its associated environment, with which they will be concerned during the performance of their duties.

1.2 Project References

The following references include the Project Contract and Delivery Order, Contractor Deliverables, Applicable Standards, and Proprietary Vendor Documentation.

1.2.1 The Project Contract and Delivery Order

Department of the Army, Commander US Army CECOM
Contract No. DAAB07-93-D-T001
Task Assignment Plan (TAP) No. 96-023

1.2.2 Contractor Deliverables

Title	Date
<i>JEDMICS/CADA Functional Description with Addendum</i>	15 November 1996
<i>JEDMICS/CADA End Users Manual</i>	15 November 1996
<i>Final Report:</i>	15 November 1996

1.2.3 Applicable Standards

MIL-STD-1840A	Automated Interchange of Technical Information
MIL-PRF-28002A	Raster Graphics Representation in Binary Format
MIL-PRF-28002B	Raster Graphics Representation in Binary Format
MIL-HDBK-59B	DoD CALS Implementation Guide
ANSI Y14.1-1980	Drawing, Sheet, Size, and Format

1.2.4 Proprietary Documentation

The following Commercial-Off-The-Shelf (COTS) products are integrated into the CADA tools and licenses are required to use these software packages (See Appendix C).

Vendor Product¹	Usage
NestorReader™	Intelligent Character Recognition (ICR) Product from NCS™ Recognition Products (formerly Nestor).
ScanFix™	Software Libraries for line removal and deskewing from TMS Sequoia
UniSoft Imaging	Imaging Software Libraries for compression, rotation and display of image data from UniSoft Imaging.

1.3 Terms and Abbreviations

API	Application Program Interface
ASCII	American Standard Code for Information Interchange
CAD	Computer-aided Design
CADA	Computer-Assisted Data Acceptance
CALS	Commerce at Light Speed
CECOM	Communications-Electronics Command
COTS	Commercial-Off-The-Shelf
CPU	Central Processing Unit
CTC	CALS Technology Center
CTN	CALS Test Network
DIU	Document Image Understanding
DLA	Defense Logistics Agency
DoD	Department of Defense
DSREDS	Digital Storage and Retrieval Engineering Data System
ED	Engineering Data
EDCARS	Engineering Data Computer Assisted Retrieval System
ERR	Engineering Release Report
GB	Gigabyte
GUI	Graphical User Interface
ICG	Integrated Computer & Graphics Systems
ICR	Intelligent Character Recognition
ID	Identification Data
IMS	Image Management Systems
JCALS	Joint Computer-aided Acquisition and Logistic Support
JEDMICS	Joint Engineering Data Management Information Control Systems

¹ Other vendor products may be used in the future.

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MB	Megabyte
MICOM	Missile Command
MR	Modification Request
NFS	Network File System
OASD	Office of the Assistant Secretary of Defense
OCR	Optical Character Recognition
ODA	Open Document Architecture
OS	Operating System
PDL	Page Description Language
PM	Program Manager
QA	Quality Assurance
ROI	Region of Interest
RAM	Random Access Memory
ROM	Read Only Memory
TCP/IP	Transport Control Protocol/Internet Protocol
TIFF	Tagged Image File Format
VLSI	Very Large Scale Integration
VQA	Visual Quality Assurance

Section 2 SYSTEM OVERVIEW

2.1 System Application

The CADA system was developed as a part of the Computer-aided Acquisition and Logistics Support (CALS) infrastructure modernization effort with funding from the Office of Assistant Secretary of Defense (OASD) CALS policy office. CADA addresses the underlying need of providing a foundation for uniform and consistent acceptance criteria for quality assurance (QA) procedures. CADA helps to factor out the human subjectivity component of QA analysis. Subjectivity exists among different users and also for a single user across a time span. Common causes are fatigue, human errors, and outside influences (such as the quality of previously viewed images or display device limitations). CADA provides a consistent starting point for reviewing images by judging all images in a batch with a consistent criteria. By providing an automated system which performs QA checks without intermediate human intervention, QA throughput is increased.

The application described herein is an extension of the original CADA system and addresses automated QA directly from a JEDMICS repository. JEDMICS/CADA provides the capability to accept engineering drawing data in raster format and provides automated, unattended, QA of the engineering drawing data prior to storage in the DoD Services Image Management Systems (IMS) repositories. The JEDMICS/CADA system may also be applied to the pre-acceptance of data at the contractors site or at the Government receiving site. The existing procedures for data acceptance requires visual QA of each image on a high resolution graphics workstation monitor. This labor-intensive process is time consuming, costly, and prone to error over time. Application of JEDMICS/CADA reduces the manual QA effort and results in more efficient and cost effective acceptance of raster data.

JEDMICS/CADA allows a user to input data, perform automated evaluation of images, view/print the images, override the automated results if necessary, generate reports, and output data. JEDMICS/CADA operates on a Sun SPARCstation that has access (locally or via a network) to a tape drive and printer. The operator initiates the input and automated processing of the image data, analyzes the results, and the JEDMICS/CADA workstation can view images to make a final accept/reject decision for the batch. Once an evaluation has been completed, the user can then output the accepted, the rejected, or all the images from the batch to a tape or a mounted disk volume. If the source was JEDMICS Pending, the evaluated batch can be output as a new batch to Pending. JEDMICS/CADA has a Graphical User Interface (GUI) that requires minimal effort for the user to operate.

Cost effective 100 percent QA of engineering drawing raster data can be performed since QA operators are armed with JEDMICS/CADA's automated evaluation information about each image in a batch and can develop reports interactively while reviewing documents. As users become more confident and familiar with JEDMICS/CADA, QA efficiency can be increased by viewing only the most relevant images in a drawing (e.g., first, second, and last sheets in a document). In addition, since operators have the ability to override JEDMICS/CADA decisions, final accept/reject control is always retained by the operator. The specific application for the JEDMICS/CADA is to provide

an interface to the JEDMICS Pending and Permanent storage, via the JEDMICS API, and to provide additional features to JEDMICS/CADA that directly enhance image quality assurance and JEDMICS index validation capabilities.

2.2 System Organization

JEDMICS/CADA is designed to operate on one batch at a time. The main operations that will be performed on a batch, after input, are Evaluate, View, Generate Report, and Output. These operations can be performed in almost any order. The exception to this rule is that a batch must be evaluated before any subset of the batch can be output. Some functions may also not be available if an evaluation is not performed. Figure 1 depicts a typical flow of a batch through the JEDMICS/CADA system.

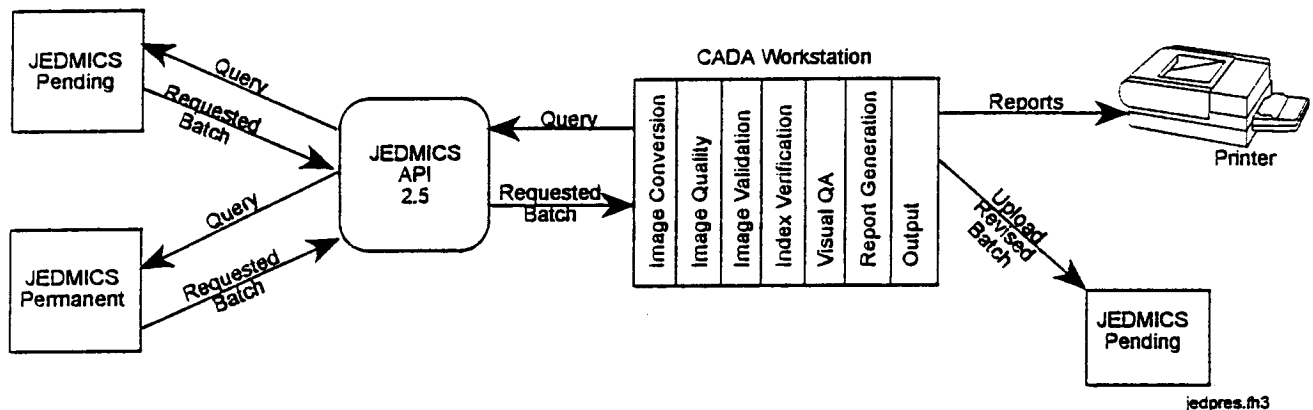


Figure 1. Batch Flow within CADA

The CADA system has the following functional areas:

1. **Suspend:** The user can input a new batch from a JEDMICS Permanent or Pending data base, a tape or a directory. A suspended batch is kept in the pool of suspended batches and can be opened again to resume work. A removed batch is completely removed from the system. It will not be accessible from within JEDMICS/CADA unless it is reloaded.
2. **Application, Evaluation, and Housekeeping Parameters:** The user should specify his or her default working environment upon starting JEDMICS/CADA. The JEDMICS/CADA defaults may be changed by setting options using the option windows from within JEDMICS/ CADA. These options control various aspects of CADA's operation such as where data and log files are stored, automated evaluation parameters, and device locations/configurations, and dataset and feedback directory cleanup.

3. **Automated Evaluation:** If the Validation option is turned on, the size of the image is determined based on the found border to border distance. During this procedure, image quality is evaluated for reproducibility and legibility. If the ID option is turned on, the header Identification Data (ID) information is checked for accuracy against the same fields within the image for each image in the batch. The validation option must be on in order to run ID.
4. **Visual QA:** The user can view all or some of the images in an active batch. During visual QA, the JEDMICS/CADA evaluation results and header ID information is displayed. The user may override the JEDMICS/CADA evaluation status, change the information in the header, or print the image.
5. **Report Generation:** The user can display or print evaluation status reports or batch data lists.
6. **Output:** The users can output the accepted, rejected, or all of the images in an active batch to a 9-track tape or mounted disk volume. Output can be specified to use a MIL-STD-1840A CALS header format with MIL-STD-28002A data. If the batch source was JEDMICS Pending, the evaluated batch is reinserted to the JEDMICS Pending data base as a new batch.

The design of JEDMICS/CADA is based upon the functions performed by QA operators using the existing repository systems. Because the majority of the software units provide basic input of data/parameters and output of results, a flexible control flow of data has been implemented that allows incorporation of new features and software into JEDMICS/CADA without a major effect on overall operation.

2.3 Software Inventory

The following items comprise the software inventory needed to build and run JEDMICS/CADA.

Operating System -

- Sun OS version 4.1.4 (Solaris version 1.1.2)
- OpenWindows v3.x or Motif v1.x for the graphical user interface (GUI).

COTS Products (others with equivalent features may be substituted) -

Product	Vendor
NestorReader Library	NCS™ Recognition Products Group
ScanFix™ Library	Sequoia TMS Data Corp.
XVT GUI Portability Toolkit	XVT, Inc.

The following is the list of Source Code Software Units which have been developed on a Sun-compatible platform using C language.

- CADA Main Module
- User Interface
- Evaluation Control/Support
- Image Quality
- Image Validation
- Key ID Verification
- Input/Output
- Utilities
- Image Handling Control
- Image Utilities

All of the COTS products and software units are needed to build and run JEDMICS/CADA. There are no contingencies or alternate modes of operation for JEDMICS/CADA during peacetime, war, or conditions of alert.

2.4 Information Inventory

2.4.1 Resource Inventory

JEDMICS/CADA makes use of the following files and data banks for storing information. Each file/data bank is described in the following subsections.

2.4.1.1 Loaded Batches

JEDMICS/CADA performs all processing on data which is contained within a loaded batch. Each user account supplies a data directory in the **DATA_DIR**: variable of the JEDMICS/CADA configuration file (*cada.config*). A subdirectory for each loaded batch will be created. In the **DATA_DIR** directory, the file *dataset.master* maintains information about each batch currently loaded by JEDMICS/CADA. In the sub-directory of each batch, a file with the naming convention *batch_number.lst* is used to maintain information about each image in a batch.

2.4.1.2 Alpha-Numeric Sort Information

The information required by the alpha-numeric sort features are contained within the following three files.

<i>batch_number.aln</i>	Contains data structure dumps for DRAWING, SHEET, REV, SUBSHEET in alphanumerically sorted order. This file is used by the evaluation software.
<i>batch_number.inx</i>	Contains the alphanumerically sorted list of sequence numbers for images within a batch.
<i>batch_number.srt</i>	Contains a sequence of the contents of the structures which comprise the dataset. This file is used by the evaluation software to interpret the <i>.aln</i> file.

2.4.1.3 Supporting Files

JEDMICS/CADA requires the following supporting files during execution. These files are located either in the JEDMICS/CADA working directory, or in the support files subdirectory.

ICR Memory: During ID processing the ICR software requires the memory files *ansm3050.me2*, *puhp0001.me2*, and *blob0080.me2*.

Recognition Specification: The following files are used during recognition by the ICR.

<i>approach3.spc</i>	Used during separate revision block processing to recognize the title.
<i>approach4.sp</i>	Used during separate revision block processing to recognize the contents of the revision letter column.
<i>assoc.spc</i>	Used to recognize the contents of the area selected for an Associated List.
<i>constant.spc</i>	Used to recognize the contents of the engineering drawing title block.
<i>string.spc</i>	Used during the recognition of a string after line-thinning has been performed.

Configuration File At startup and throughout the execution of JEDMICS/CADA the configuration parameters are read from the *cada.config* file. This file can be

edited via a text editor or through the options pull-down menu from the JEDMICS/CADA main window.

Bitmap files for logos: There are two bitmap files used to display the JEDMICS logo: *logo.h* and *small_logo.h*.

Title Block Size Data Base The file *title_size.dbs* is used to specify dimensions of engineering drawing title blocks which differ from the dimensions specified in the ANSI standard. The dimensions are grouped by CAGE code.

Image Cleanup Configuration Files JEDMICS/CADA will perform image cleanup/enhancement during the ID location and verification. This cleanup is performed only to improve the ICR results. The original raster image is not altered. For image cleanup JEDMICS/CADA currently uses the COTS product ScanFix. This software requires the following configuration files:

<i>rotate 90.cfg</i>	Rotates the input image 90°
<i>rotate 180.cfg</i>	Rotates the input image 180°
<i>rotate 270.cfg</i>	Rotates the input image 270°
<i>title.cfg</i>	line removal in title block and associated list ROI
<i>whole.cfg</i>	skew correction and line detection for the entire image

2.4.1.4 Log Information

JEDMICS/CADA logs information for each JEDMICS/CADA work session. The actions performed, along with a date and time stamp, are written to the *cada.log* file. The *cada.log* file has information on operator actions as well as evaluation parameters used and JEDMICS/CADA evaluation results. At the start of a new JEDMICS/CADA session, the previous *cada.log* file is archived in a feedback directory. The naming convention used for the file name is as follows: *year.month.day-hour.minute.log*. The log details events up to the time specified by the filename. JEDMICS/CADA also maintains log files specific to each loaded batch. These log files indicate the operator actions performed on each batch and the time between events. The naming convention is *batch_number.log*. Both log files are located in the LOG_DIR (a variable specified in the *cada.config* file).

2.4.2 Report Inventory

JEDMICS/CADA produces four types of reports: Evaluation Status Report, a Batch Data List Report, Image Integrity Report, and a Pending Status Report.

The Evaluation Status Report is a snapshot of the current active batch. The report specifies the overall statistics of a batch, as well as the conditions under which the batch was evaluated. The Evaluation Status report also lists information about each image in a batch including its key ID data, user-generated on-line comments, and a final reject/accept decision. This report can be generated at any time during a JEDMICS/CADA session on an active batch.

The Batch Data List Report contains general information on a batch. The three sections of the report are the Batch Summary, MIL-STD-1840A Declaration, and Batch Image List Summary.

The Pending Status Report is only generated when batches have been output to Pending. This report provides the original Pending Batch ID, as well as the image output count for each output Batch and the corresponding ID for each newly created batch.

Batch Summary:	General information on the batch including current status, total file count, and contract information.
MIL-STD-1840A Declaration:	Complete contents of MIL-STD-1840A declaration file.
Batch Image List Summary:	Summary of drawing ID information (drawing number, revision, size, sheet, and CAGE) along with the MIL-STD-1840A file name.

The Image Integrity report is generated for evaluated JEDMICS Pending or Permanent batches. The report specifies compliance of downloaded raster images to the C4 specification. The images are sorted into four categories: Sever, Warning, Non-Compliance, and Undesirable Qualities. Each image's integrity information is divided into its components of C4 header, main title index and data, and preview title index and data. For example:

Header	SEVER: Preview Image Bad Number of Tiles
Header	SEVER: Preview Image Too many Tiles for given dimension (512 x 776)
Header	Undesirable: No Hollerith

2.5 Processing Overview

Since JEDMICS/CADA performs all processing locally, its impact on processing procedures of the JEDMICS repository is restricted to the batch query, and the input and output of images. JEDMICS/CADA's interfacing with the current IMS is limited to input and output of raster data and index information via the JEDMICS API. Using JEDMICS/CADA, incoming data should be reviewed at the JEDMICS/CADA workstation. Then the QA operator should forward the accepted documents to the repository system for a batch accept via CALS output tape or over a network. A

rejected document's report produced by JEDMICS/CADA (notes and reject reasons are added during QA) will then be sent back to the originating source. The objective of JEDMICS/CADA is to perform 100 percent QA and identify poor quality images. The use of CADA provides this in a more efficient manner at a reduced cost to the Government. Figure 2 shows how JEDMICS/CADA should be used in the process of receiving, loading, evaluating, and outputting digital raster data.

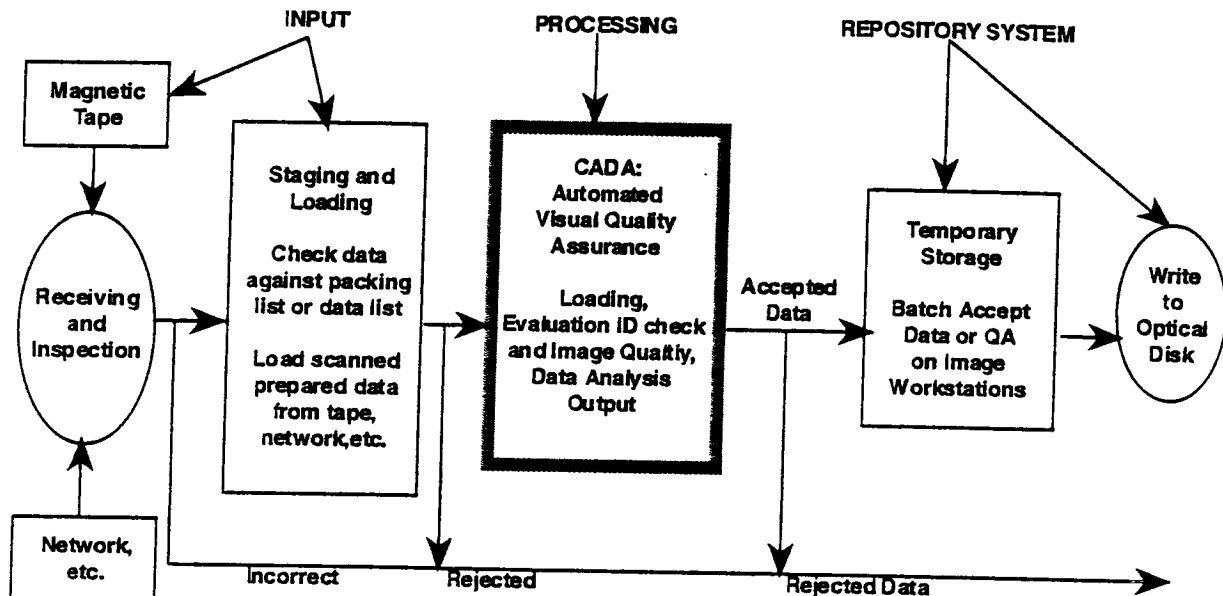


Figure 2. Proposed QA Procedural Flow using JEDMICS/CADA

2.6 Communications Overview

JEDMICS/CADA does not require any specific communication software or hardware to perform automated evaluation locally. JEDMICS/CADA, however, interfaces to JEDMICS via the 2.5 API for access to JEDMICS Pending and Permanent.

JEDMICS/CADA can take advantage of Transport Control Protocol/Internet Protocol (TCP/IP) network communications by using X windows and Network File System (NFS) protocols. Since JEDMICS/CADA's user interface is built using X windows, the application can be used remotely over a network from any X server terminal. Performance of JEDMICS/CADA will degrade during visual QA sessions since large amounts of graphical data must be sent across the network which may have high traffic or low bandwidth.

By using NFS, JEDMICS/CADA can load or output CALS-compliant data from or to remotely mounted disk volumes. By using JEDMICS/CADA's Load from Directory or Output to Directory commands, transfers of CALS data via tapes can be eliminated.

2.7 Security

Security for this release is limited to the password a user has for his or her Unix account on the platform where CADA resides. Once a user has successfully logged in, JEDMICS/CADA does not provide any additional identification or security to stop users from viewing images, overriding evaluation results, modifying MIL-STD-1840A header data, or outputting images. The system administrator should be responsible for controlling who has access to the system and training users on basic security precautions when using a multi-user computer operation system. The system administrator/security officer should determine user privileges when a user account is established. The system administrator should set each user's account with that user's own JEDMICS/CADA directory structure that cannot be written or read by any other user. This coupled with the user account passwords should provide basic protection from users manipulating anybody's active data.

An auto-log out time-out should be set on user accounts to avoid unauthorized use when users inadvertently leave their JEDMICS/CADA sessions unattended for long periods of time. Users should also change their passwords on a regular basis and the passwords should not contain information that can easily be guessed (e.g., phone numbers, addresses, family names, etc.).

JEDMICS/CADA also logs information for each JEDMICS/CADA work session. The actions performed, along with the date and time stamp, are written to log files. The files have information on operator actions as well as evaluation parameters used and JEDMICS/CADA evaluation results. The log files are written as events occur to avoid loss of information.

Section 3 DESCRIPTION OF RUNS

All of the runs within JEDMICS/CADA are performed through the GUI.

3.1 Run Inventory

A run within JEDMICS/CADA is an atomic operation that is expected to be performed by the user or the system administrator. The characteristics of each of these runs are the following.

- Each of these runs can be executed under certain constraints.
- Each run has a guaranteed completion on its own and takes a pre-estimable amount of time.
- The run is activated by certain triggers (e.g., real time clocks, hardware interrupts or software interrupts, etc.). For JEDMICS/CADA all of the runs are activated by the software events of user requests.
- A run requires certain software and/or hardware resources.
- A run will terminate on its own, but it may be stopped through an interrupt, which could be any of the triggers.
- A run has a set of predictable outputs.

The following are runs that are performed through the Graphical User Interface.

- Input
- View
- Open
- Evaluation
- Suspend
- Report
- Remove
- Output
- Options

The management information for each of these runs is described in Section 3.5.

3.2 Phasing

JEDMICS/CADA cannot process multiple runs simultaneously. A typical sequence of runs during a single batch run is shown in Figure 3. The JEDMICS/CADA status window guides the user through

these steps by suggesting a "Next Recommended Action" during various stages of operation. The Options, View, Evaluate, Report, and Output runs can be performed in almost any order. The exception to this rule is that a batch must be evaluated before a subset of the batch can be output. Some functions may also not be available if an evaluation is not performed (e.g., the Rev-Sheet grid in the visual QA workspace cannot be displayed without an evaluation having been performed).

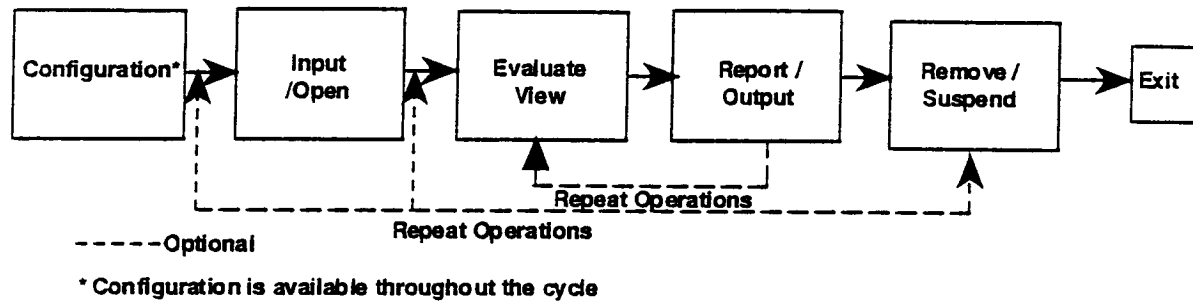


Figure 3. Typical Sequence of Runs

3.3 Diagnostic Procedures

JEDMICS/CADA does not have any specific diagnostic tools to evaluate errors or to perform trouble shooting. Most trouble shooting will have to be done manually for this release of JEDMICS/CADA. However, enormous effort has been made for JEDMICS/CADA to thoroughly communicate actions and errors to maintenance personnel. This is accomplished through the logging of messages to the *cada.log* file. Essentially, every JEDMICS/CADA software response is reported to this file with an operator identification and, time and date stamp. See Figure 4 for an example of the *cada.log* file.

```
11/13/96 11:45:39 init_datasetno: opened </home/cadadev/cecom/data/dat/dataset.num>
11/13/96 11:45:39 init_datasetno: starting datasetno 1
11/13/96 11:45:39 ** CADA STARTUP: Configuration Complete. Operator ID <12> **
11/13/96 11:46:28 Passed JMXCreate for session object
11/13/96 11:46:28 Passed JMXCreate for drawing object
11/13/96 11:46:28 Passed JMXLink for session and drawing objects
11/13/96 11:46:28 Passed JMXCreate for accdoc object
11/13/96 11:46:28 Passed JMXLink for drawing and accdoc objects
11/13/96 11:46:31 Established a Connection to JEDMICS repository
11/13/96 11:57:11 Done querying the permanent storage
11/13/96 11:57:11 The number of drawings that matched 20000
11/13/96 12:10:29 DwgNo: [ JFT-MON-MAP1, sn: 0001, sz: C, r: DD, cg: 80063
11/13/96 12:10:43 DwgNo: [ JFT-MON-MAP2, sn: 0001, sz: C, r: D, cg: 80063
11/13/96 12:10:53 DwgNo: [ JS4-B-423395, sn: 0001, sz: B, r: D, cg: 80063
11/13/96 12:10:55 DwgNo: [ DLJSC-A-314639, sn: 0001, sz: A, r: , cg: 80063
11/13/96 12:10:57 DwgNo: [ DLJSC-A-314639, sn: 0002, sz: A, r: , cg: 80063
11/13/96 12:15:52 DwgNo: [ DLJSC-A-321633, sn: 0054, sz: A, r: A, cg: 80063
11/13/96 12:15:54 DwgNo: [ DLJSC-A-321633, sn: 0055, sz: A, r: A, cg: 80063
11/13/96 12:15:56 DwgNo: [ DLJSC-A-321633, sn: 0056, sz: A, r: A, cg: 80063
11/13/96 12:15:57 DwgNo: [ DLJSC-A-321633, sn: 0057, sz: A, r: A, cg: 80063
11/13/96 12:15:58 DwgNo: [ DLJSC-A-321633, sn: 0058, sz: A, r: A, cg: 80063
11/13/96 12:16:00 DwgNo: [ DLJSC-A-321633, sn: 0059, sz: A, r: A, cg: 80063
11/13/96 12:16:01 DwgNo: [ DLJSC-A-321633, sn: 0060, sz: A, r: A, cg: 80063
11/13/96 12:16:01 images in batch 217
11/13/96 12:16:01 batch size 9904044
11/13/96 12:16:02 [217] images have been loaded. The query is still active.
11/13/96 12:16:02 Batch 1, load started: 12:16:02, ended: 12:16:02. 0 seconds.
11/13/96 12:16:02 Operator 6184384 loaded new Batch 1.
11/13/96 12:16:02 eval started for dataset 1
11/13/96 12:16:04 /home/cadadev/cecom/data/dat/1/C4.001
11/13/96 12:16:05 Border: top = 0 bottom = 2560 left = 0 right = 3584
11/13/96 12:16:05 tiles are top: 0 bottom: 20 left: 0 right: 28
11/13/96 12:16:05 First pass Image Quality Analysis
11/13/96 12:16:05 ABO: 0.001 AWO: 0.075 RL: 0.023 FF: 4.370
11/13/96 12:16:12 Image dimensions don't match the header. Finding the image size empirically.
11/13/96 12:16:12 image will be processed as LAND_B size
11/13/96 12:16:14 check_border_evd: left border not found
11/13/96 12:16:14 Low confidence for top border.
11/13/96 12:16:14 No equivalent detailed reason for 15012.
11/13/96 12:16:14 Low confidence for bottom border.
11/13/96 12:16:14 No equivalent detailed reason for 15013.
11/13/96 12:16:14 check_border_size: incorrect top to bottom border
11/13/96 12:16:14 distance, setting border to border size
11/13/96 12:16:14 border [REAL]: left = 1281 right = 3495 top = 1083 bottom = 1458
11/13/96 12:16:14 Border: top = 1083 bottom = 1290 left = 1281 right = 3368
11/13/96 12:16:14 tiles are top: 9 bottom: 9 left: 11 right: 25
11/13/96 12:16:14 Second pass Image Quality Analysis
11/13/96 12:16:15 ABO: 0.001 AWO: 0.013 RL: 0.005 FF: 12.645
11/13/96 12:16:15 IMG Result: ACCEPT
11/13/96 12:16:15 JFT-MON-MAP1 sh: 0001 rev: DD sz: C cg: 80063 ts:
11/13/96 12:16:16 after title block processing
11/13/96 12:16:16 dwgtype: 2 dwgno: 0 cage: 0 sheet: 1 rev: 0 size: 0
11/13/96 12:16:16 Will try to rotate the image by 270 degrees.
11/13/96 12:16:16 fix.c: error reading configuration file rotate270.cfg

11/13/96 12:16:16 Error in rotating by 270 degrees using scanfix.
11/13/96 12:16:16 error in alternate id
11/13/96 12:16:16 No equivalent detailed reason for 20017.
11/13/96 12:16:16 error in perform_id.
11/13/96 12:16:16
```

Figure 4. Typical Output of a *cada.log* File

In addition to this, there are some specific circumstances that the maintenance personnel should be aware of to be able to correct problems. They consist of the following.

- Various Path names in *.cshrc* or *cada.config*
- Disk Space and Corrupted Index Files (*dataset.master* and *batch_number.lst*)
- Printing Images with Large PostScript Files
- Printing Reports using XVT Print files
- JEDMICS host and account information (*services*, *jmx-connect.txt*, and *config*)

3.3.1 Various Environment Variables in *.cshrc* or Path names in *cada.config* Files

Several environment variables specific to JEDMICS/CADA in the *.cshrc* should be set upon installation and should not be casually changed unless the user is familiar with their use. JEDMICS/CADA requires that the following environment variables are set prior to execution.

PATH=	should include the JEDMICS/CADA executable and shell directories.
XVTPATH=	should be set to the JEDMICS/CADA XVT print files directory.
CADA_DIR=	should be set to the JEDMICS/CADA executable directory.
UIDPATH=	should be set to the JEDMICS/CADA executable directory + <i>/%U</i> (e.g., <i>/home/cada/bin/%U</i>).
CADA_WS_XDPI=	should be set at the physical screen horizontal resolution (e.g., 120).
CADA_WS_YDPI=	should be set at the physical screen vertical resolution.
DDMS_CONFIG=	should be set to the config file, located in the support files subdirectory of the JEDMICS/CADA executable directory.

In the *cada.config* file, JEDMICS/CADA requires at a minimum that the keyword values found in Table 1 be set.

Table 1. Minimum Required Keyword Values

KEYWORD	VALID VALUES
DATA_DIR	any readable and writable directory
LOG_DIR	any readable and writable directory
ADMIN_DIR	any readable and writable directory
TAPE_OUTPUT_DIR	any readable and writable directory
DIR_OUT_DIR	any readable and writable directory

If these or any other values are not correct, JEDMICS/CADA will alert the user of the problem values and exit gracefully. Use a text editor such as vi to view and edit the *cada.config* file. The *Data_dir*, *Log_dir*, and *Output_dir* values should be checked to see if the path names given are valid. Once the values are correctly specified, JEDMICS/CADA should start successfully. The user can use the options windows to easily specify the rest of the desired parameters for the default working environment. Although the entire *cada.config* file can be created using a text editor, setting the rest of the keyword values from within JEDMICS/CADA will be less prone to error since JEDMICS/CADA will perform error checking on all input values. Refer to Appendix B for more information on the keyword-value combinations of the *cada.config* file.

3.3.2 Disk Space and Corrupted Index Files (*dataset.master* and *batch_number.**)

JEDMICS/CADA does not check for low disk space situations. It is important to monitor this situation carefully because the *dataset.master* and *batch_number.** index files can get corrupted if adequate disk space is not available. JEDMICS/CADA will notify users of available disk space prior to inputting a batch. As a batch is loaded, it is stored according to MIL-STD-1840. Because of this, a batch of images will require approximately twice its size for temporary storage by JEDMICS/CADA (a five megabyte [MB] batch requires 10 MB of disk space). Additional space will be required if the user intends to output the images to tape or directory. For example, a five MB batch will require up to an additional 10 MB of disk space for output to a directory or output of a batch subset. A user should have an idea of how large the incoming data is and ensure there is adequate disk space for temporary storage. The JEDMICS/CADA status window displays how much disk space a batch occupies.

If the drive volume where the *dataset.master* and *batch_number.** files reside encounters an out of disk space error while data is being written to the files, there is a strong possibility that the files will be corrupted during the process. If this happens, the user should exit from JEDMICS/CADA immediately. Once JEDMICS/CADA has been restarted, the user should try to open the batches that were previously loaded to see if JEDMICS/CADA's data base index files have been corrupted. If none of the batches can be opened, the data directory structure and index files should be reset. This can be done by using the Reset Datasets command under the Option>CADA Housekeeping menu. This will delete all previously loaded data sets and reset the data set numbering to 1.

3.3.3 Printing Images with Large PostScript Files

JEDMICS/CADA allows a user to print the entire displayed image or a portion of the displayed image while in the visual QA workspace. The images are rotated and scaled to the user-specified page dimensions and printer resolution. A large spool area should be set up by the system administrator to allow printing of these images. A typical image scaled to A size at 300 dpi will result in a 1.5 to 2.0 MB PostScript file. If multiple images are printed, the available free disk space for the spool area will need to be multiplied by this amount.

The executable **tiff2ps** which is located in the \$CADAHOME/Shells directory, is required for printing images. If problems not involving the spool area occur, check this executable to see if it has been corrupted or moved unintentionally. Re-install the executable from the JEDMICS/CADA installation disks/tape if necessary.

3.3.4 Printing Reports using XVT Print Files

JEDMICS/CADA uses various files provided by XVT to print reports. If the environment variable **XVTPATH** (full path name of the specified print directory) is not set or if all of the necessary files are not present, JEDMICS/CADA will alert the user with error messages. The following files should be present in the specified print directory:

<i>C-B.AFM</i>	<i>C.AFM</i>	<i>H-O.AFM</i>	<i>T-BI.AFM</i>	<i>afm.dir</i>
<i>C-BO.AFM</i>	<i>H-B.AFM</i>	<i>H.AFM</i>	<i>T-IAFM</i>	<i>xvtprolg.ps</i>
<i>C-O.AFM</i>	<i>H-BO.AFM</i>	<i>T-B.AFM</i>	<i>T-R.AFM</i>	

These two conditions should be checked first if JEDMICS/CADA cannot print the reports. If these conditions are set properly and JEDMICS/CADA still does not print the reports, check the status of the printer and consult the printer configuration section of your computer's reference manual.

3.4 Error Messages

JEDMICS/CADA produces various types of error messages. Errors can occur during text input, reading and writing files, allocating memory, etc.

3.4.1 Error Messages Communicated to Users through XVT Messages

JEDMICS/CADA uses audible beeps to alert the user to errors. The audible alarm will always have an error or message dialog appear to describe the current situation.

3.4.1.1 Text Field Flags

JEDMICS Permanent Query: Prior to performing the query, the user is prompted for information to specify the query:

- Query Name (this is a mandatory field used within JEDMICS/CADA),
- Drawing number,
- Drawing Size,
- Document CAGE,
- In Date, or
- Platter ID.

If all the query parameter fields (all fields, except query name) are left blank, the query will return a cursor containing all of the images in Permanent Storage.

Corrective Action: Restrict the query to a size less than 20,000. This is done by using the In Date field (i.e.: select all drawings entered on a specific date) or the Platter ID field (i.e.: select all drawings on the specified platter).

Other queries can be given just by specifying a drawing number, size, or CAGE code.

JEDMICS Pending Query: Prior to performing the query, the user is prompted for the following information:

- Query Name (this is a mandatory field used within JEDMICS/CADA), and
- Batch ID.

If the Batch ID is not entered, the user will be notified.

Corrective Action: Enter a valid Pending Batch ID

Restrictions: None

Batch Identification Screen: Upon input of a CALS batch, the user is prompted to enter information for:

- Program Name,
- System Name,

- Prime Contractor,
- Description, and
- Contract Identification.

If any of these fields are left blank (or the entered data does not meet the necessary requirements) when the user tries to exit this screen, a message will be displayed indicating that information is required.

Corrective Action: Enter all required data.

Restrictions:

Contract Identification	32 characters maximum
Description	255 characters maximum

CALS Output Information Screen: When outputting a tape, the user is prompted to enter information for source system (*srcsys:*) and destination system (*dstsys:*). If any of these fields are left blank (or the entered data does not meet the necessary requirements) when the user tries to exit this screen, a message will be displayed indicating that information is required.

The user may also output the entire set or only the ACCEPTED or REJECTED images from the set. If the user selects a set for which there are no images, a message will appear indicating that another selection must be made.

Corrective Action: Enter all required data.

Restrictions:

source system	255 characters maximum
destination system	255 characters maximum

JEDMICS/CADA View Module: Override header entries. If the user enters incorrect data in the header fields he/she will be prompted for the correct information.

Corrective Action: Enter all required data.

Restrictions:

drawing type	two upper case alphanumerics
drawing number	15 uppercase alpha numerics (can have dashes)
CAGE	5 alpha numerics
size	can only be A, B, C, D, E, F, J
sheet	three or four numerics
revision	two upper case alphas excluding I, O, Q, S, X, Z

3.4.1.2 Errors Reading/Writing Files and Allocating Memory

There are many places where errors may appear which deal with reading files or allocating memory. The following is a list of potential problems.

- initializing batch
- initializing evaluation configuration
- initializing ID QA software
- updating datalist record
- opening datalist file
- reading datalist file
- allocating memory for datalist
- writing new header for image file
- insufficient disk space
- insufficient memory
- reading/opening help file
- opening save view list

- writing view list
- reading view list

For some of these errors, the user may be prompted to try a corrective action. If the proposed method does not correct the problem, the system administrator should contact the appropriate JEDMICS/CADA support personnel.

3.4.1.3 Fatal Error Messages

If a fatal error message is encountered, a message will appear stating that a Fatal Error has occurred and the cause of the error. JEDMICS/CADA will then terminate.

Corrective Action: The user should note the reported cause of the error and contact the system administrator.

3.5 Input (Mandatory)

The Input run allows a user to input a batch of raster images. This run is mandatory in order to perform JEDMICS/CADA evaluation.

3.5.1 Control Inputs

The user can specify input to come either from a JEDMICS Permanent or Pending tape or directory. If inputting data from a tape, the following information must be input to JEDMICS/CADA: number of tapes and tape density. If loading from a directory, it is assumed that the directory has been properly configured with CALS data (refer to Appendix C, End User Manual). Once the data has been loaded, the user will need to input the following information to identify the batch:

- Program Name (such as DSREDS, EDMICS, EDCARS, DLA, etc.);
- System Name (such as Blackhawk, Patriot, Titan, etc.);
- Prime Contractor (from packing slip or work order);
- Description (a free form field for any information the operator needs to describe the batch); and
- Contract Identification (enter the contract number from packing slip or work order).

3.5.2 Management Information

The Input run can only be initiated from within JEDMICS/CADA through its GUI. Once a batch has been loaded and identified, it is considered active until suspended or unloaded. The Load run

time depends on the size of the batch to be loaded. Table 2 shows typical load times from a HP 9-track tape drive and a directory.

Table 2. Typical Input Run Performance Times

CATEGORY	FUNCTION	NO OF IMAGES	TIME (IN MINUTES: SECONDS)
INPUT	Directory	5	0:12
		100	1:38
	Tape	5	0:37
		100	5:02
	JEDMICS Permanent (Query)	100	9:05
	JEDMICS Permanent (Load)	100	3:30
	JEDMICS Pending (Query)	100	0:06
	JEDMICS Pending (Load)	100	3:40

The Input run can be terminated by clicking [Cancel] at any one of the following check points: Batch Input/Output Window, Select Source Directory Window, Load Errors Window, Batch Identification Window, and the Load Batch Summary Window.

During the Input run, the peripheral and resource requirements include a 9-track tape drive if loading from a tape, a properly configured CALS source directory if loading from a directory, connection to JEDMICS and an account with the appropriate Permanent/Pending access privileges if loading from JEDMICS and enough free disk space on the specified (data directory) mounted drive volume where the batch will be stored. If the batch will output to tape or directory, there must be enough free disk space on the specified (output) mounted drive volume to store the temporary files created during this process. The JEDMICS/CADA status window displays how much disk space a batch occupies.

Once data is loaded into a temporary location specified by JEDMICS/CADA's configuration, a user with the proper privileges could view, copy, remove, or modify the files. The operator should be aware of this security issue.

3.5.3 Input-Output Files

JEDMICS/CADA updates the *dataset.master* file and creates/initializes the *batch_number.lst*, *batch_number.aln*, *batch_number.inx*, and *batch_number.srt* files for the loaded batch. The Input run events are written to the *cada.log* and *batch_number.log* files. An errors log file is created when inputting CALS data and logs errors or warnings that occurred during the loading procedure.

The file *dataset.master* maintains information about each batch currently loaded by JEDMICS/CADA. In the sub-directory of a batch, the *batch_number.** files are used to maintain evaluation/alphanumeric sort information about each image in a batch. These files are maintained until a Remove Batch run is initiated by the user.

Security becomes an issue since a user with the proper privileges could inspect, copy, remove, or modify any of these files.

3.5.4 Output Reports

CALS Input: Once a CALS batch has been input, the user will be notified if there were any errors or warnings encountered during the load operation. The load errors log file will indicate which errors occurred during the loading procedure and in some cases, in which files the errors were found. The name of the file is *EVALUATE.LOG*. Most of the text in the file will contain nonfatal warnings. This log file resides in the batch's sub-directory and is maintained until an Remove Batch run is initiated by the user. The size of the report is dependent on the number of errors/warnings encountered during the loading operations. Security becomes an issue since a user with the proper privileges could inspect, copy, remove, or modify the *EVALUATE.LOG* file.

JEDMICS Input: Once a JEDMICS batch has been input, two reports are available. The Integrity Report provides information on the adherence to the C4 specification. The Pending Status Report provides information on the status of a Pending Query.

Evaluated Batch: Once a batch has been evaluated by JEDMICS/CADA, an Evaluation Status Report is available. If the batch is part of an automatic run and automatic print is ON, this report will automatically be printed at the end of the evaluation.

3.5.5 Reproduced Output Reports

The load errors log file (*EVALUATE.LOG*) is an American Standard Code for Information Interchange (ASCII) file that can be output to a printer for hardcopy output. This report can only be printed from the Unix command line. It is located in the directory *\$MYCADAHOME/data/dat/X-SetNumber-X/Set001* where *X-SetNumber-X* represents the number of the loaded batch.

3.5.6 Restart/Recovery Procedures

During an Input run, the user may cancel the run at any time. If the run is canceled, JEDMICS/CADA will perform all necessary cleanup and the run may be initiated again. The user is responsible for ensuring that the images passed the MIL-STD-1840A checks by viewing the Load Errors log report.

3.6 Open

The Open run allows a user to resume work on a previously loaded batch that was suspended (not removed).

3.6.1 Control Inputs

The Open run only requires the user to select a suspended batch from a previous Input run. No other inputs are required for this run.

3.6.2 Management Information

The Open run can only be initiated from within JEDMICS/CADA through its GUI. Once a batch has been opened, it is considered active until suspended or removed. The Open run time is approximately one second long. The Open run can be terminated by clicking [Cancel] at the Open Batch Window.

3.6.3 Input-Output Files

There are no input files for this run. The Open run events are written to the *cada.log* and *batch_number.log* files.

3.6.4 Output Reports

There are no reports produced as a result of the Open run.

3.6.5 Reproduced Output Reports

There are no reports to reproduce as a result of the Open run.

3.6.6 Restart/Recovery Procedures

If the suspended batches that were previously loaded do not show up properly in the Open Batch Window, then JEDMICS/CADA's data base index files have been corrupted. If none of the batches can be opened, the temporary data directory structure should be reset. This can be done from the Options>CADA Housekeeping menu selection Reset Datasets.

3.7 Remove (Mandatory)

The Remove run allows a user to delete a loaded batch from JEDMICS/CADA's temporary storage.

3.7.1 Control Inputs

The Remove run only requires the user to confirm the operation before JEDMICS/CADA proceeds. The user then has the option of displaying or printing the Evaluation Status Report for the batch. No other inputs are required for this run.

3.7.2 Management Information

The Remove run can only be initiated from within JEDMICS/CADA through its GUI. It can be performed at any time while a batch is active. The Remove run deletes the specified batch as a background process. GUI control is returned to the user in approximately three seconds. The Remove run can be terminated by clicking [Cancel] at the question dialog titled, *[The Batch will be deleted. Continue?]*. If automatic_run is ON, each sub-batch will be Removed after evaluation is performed.

3.7.3 Input-Output Files

There are no input files for this run. The Remove run events are written to the *cada.log* and *batch_number.log* files.

3.7.4 Output Reports

Final Evaluation, Batch Data List, Integrity, and Pending Status reports are generated and stored in a specified log files directory. These reports can be opened and viewed from within JEDMICS/CADA. The naming convention used for the report names are: *batch_number.report_type* where the *report_type* is either *cls* for an Evaluation Status report, *psr* for a Pending Status Report, *lst* for a Batch Data List report, or *img* for an Image Integrity report.. If an Evaluation was performed during a JEDMICS automatic run, a *.qpl* file will exist in this directory (queryname.qpl). This file can be selected and all the Evaluation Reports associated with the query name will be printed.

3.7.5 Reproduced Output Reports

The reports are ASCII files that can be output to a printer for hardcopy output.

3.7.6 Restart/Recovery Procedures

If in an extreme case, the *dataset.master* or *dataset.num* files are corrupted, all loaded batches need to be removed. This can be done from the Options>CADA Housekeeping menu selection Reset Datasets.

3.8 Suspend

The Suspend run allows a user to suspend work on an active batch. The user can resume work on a suspended batch by initiating an Open run.

3.8.1 Control Inputs

The Suspend run only requires the user to confirm the operation before JEDMICS/CADA proceeds.

3.8.2 Management Information

The Suspend run can only be initiated from within JEDMICS/CADA through its GUI. It can be performed at any time while a batch is active. The Suspend run can also be initiated when the user performs an Input or Open run while a Batch is active. Since JEDMICS/CADA can only operate on one batch at a time, a batch must be suspended before opening or loading a new batch. GUI control is returned to the user in approximately one second. The Suspend run can be terminated by clicking [Cancel] at the question dialog titled [Suspend the Active Batch?].

3.8.3 Input-Output Files

There are no input files for this run. The Suspend run events are written to the *cada.log* and *batch_number.log* files.

3.8.4 Output Reports

There are no reports produced as a result of the Suspend run.

3.8.5 Reproduced Output Reports

There are no reports to reproduce as a result of the Suspend run.

3.8.6 Restart/Recovery Procedures

There are no restart/recovery procedures for this run.

3.9 Options

The Options run allows a user to specify various application, evaluation, and housekeeping settings for JEDMICS/CADA. This allows the user to specify his or her default working environment and automated QA evaluation parameters. All configuration information is stored in the *cada.config* file.

3.9.1 Control Inputs

The Options run requires input that will control various aspects of JEDMICS/CADA's operation such as where data and log files are stored, automated evaluation parameters, and device locations/configurations, and directory and file cleanup. Refer to Appendix B for detailed information on all the available options used to configure JEDMICS/CADA. It is recommended that the evaluation parameters be specified to control the aspects of the automated evaluation prior to initiating the process.

3.9.2 Management Information

The Options run can be initiated from within JEDMICS/CADA from the main menu. The JEDMICS/CADA default parameters may be changed by setting options using the configuration windows from within JEDMICS/CADA or editing the "*cada.config*" file using a text editor.

Using the JEDMICS/CADA GUI, options can be set with relative ease. There are two configuration windows: an Application window that controls most aspects of JEDMICS/CADA's operation and an Evaluation window that controls the parameters of JEDMICS/CADA's automated evaluation. The user can set various options by selecting the [ON] or [OFF] buttons. Options that require directory paths, device names, etc. can be set by clicking the mouse pointer in the option's text edit field and typing the desired information. If any errors are found in the users settings, JEDMICS/CADA will specify which editable text field options have incorrect information and clear the erroneous entry.

From the Options> CADA Housekeeping sub-menu, the user can clean up temporary directories and files generated by JEDMICS/CADA. The following cleanup is possible:

- Reset Query Report Names
- Remove Feedback Files
- Remove Report Files
- Reset Datasets

When using the GUI, the Options runs can be terminated by clicking the [Cancel] button in the configuration windows. The only options that cannot be set from within the GUI are the *Data_Dir*, *Log_Dir*, and *Admin_Dir*. These option are usually set upon installation and should not be casually changed unless the user is familiar with their use.

When modifying the *cada.config* file from the command line using a text editor, it is important to pay close attention to the format of the option keyword-value combinations. The keyword-value combinations do not have to be in a specific order or grouping. JEDMICS/CADA is case insensitive when interpreting the keywords. The values are case sensitive since they may contain directory or device name paths. The keywords must be separated from their value(s) by a colon (e.g., *Initial_View: FULL*). JEDMICS/CADA can also handle leading and trailing white space around keywords and values. Any incorrectly formatted lines in the *config* file are identified by line number and default settings are used if possible. An incorrect *Admin_Dir*, *Data_Dir*, *Log_Dir*, *Output_dir*, or tape drive device name will cause JEDMICS/CADA to gracefully exit. Lines beginning with a "%" or "#" are treated as comments and are ignored. Blank lines are also ignored.

Security becomes an issue since a user with the proper privileges could inspect, copy, remove, or modify the *cada.config* file.

3.9.3 Input-Output Files

There are no input files for this run. The current settings for configuration can be made the JEDMICS/CADA default parameters by clicking the [Save] button while in one of the configuration windows. JEDMICS/CADA will alert the user once it has successfully saved the settings to the *cada.config* file.

3.9.4 Output Reports

There are no reports produced as a result of the Options run.

3.9.5 Reproduced Output Reports

There are no reports to reproduce as a result of the Options run.

3.9.6 Restart/Recovery Procedures

If the *cada.config* file becomes corrupted, a new *cada.config* file can be created from scratch to allow running of JEDMICS/CADA. For the new file only the *DATA_DIR*, *LOG_DIR*, and *OUTPUT_DIR* values need to be specified (*ADMIN_DIR*, which cannot be set from within JEDMICS/CADA, defaults to the *LOG_DIR* value when not present). Once in JEDMICS/CADA, use the Options windows to set the rest of the desired parameters for the default working environment. This method will be less prone to error since JEDMICS/CADA will perform error checking on all input values.

3.10 Evaluation

The Evaluation run allows a user an automated QA evaluation of the active batch. It is recommended that the evaluation parameters be specified, via a configuration run, to control the aspects of the automated evaluation prior to initiating this run.

3.10.1 Control Inputs

The Evaluation run only requires the user to confirm the operation before JEDMICS/CADA proceeds. If the batch has already been evaluated, JEDMICS/CADA will ask if the user wants to re-evaluate the batch.

3.10.2 Management Information

The Evaluation run can only be initiated from within JEDMICS/CADA through its GUL. The Evaluation run time depends on the size and content of the active batch, as well as the evaluation parameters that have been set by the user. JEDMICS/CADA will indicate an estimated time to completion for the evaluation. JEDMICS/CADA will also indicate which of the major evaluation processes (Image Quality Analysis, Image Validation, and ID Validation) will be used for the evaluation. Table 3 shows typical evaluation times for A size images.

Table 3. Typical Evaluation Run Performance Times

CATEGORY	FUNCTION	NO OF IMAGES	TIME (IN MINUTES:SECONDS)
AUTOMATED EVALUATION	Image Quality (Entire Image)	5	0:10
		100	3:41
	Image Quality (Within Borders)	5	1:07
		100	31:21
	Image Quality, Image Validation, and ID	5	2:32
		100	46:05

JEDMICS/CADA indicates that the evaluation is taking place by displaying a progress report on the main window. As each image is evaluated, the fields indicating the number of ACCEPTED and REJECTED images in the batch are updated.

Clicking [Pause] will interrupt the evaluation process and query the user by displaying [Stop Evaluation?]. To terminate the process click [Stop]. To override and proceed with the evaluation, click [Continue].

3.10.3 Input-Output Files

JEDMICS/CADA updates the *dataset.master* and *batch_number.lst* files during or at the end of the automated evaluation. The *batch_number.lst* file, which maintains information about each file in a batch, is updated with image status information as it is evaluated. The *dataset.master* is updated at the end of the evaluation with status information counts and flags specifying that the batch has been evaluated.

During the Evaluation run several temporary files are created to facilitate the evaluation process. These include expanded TIFF files created within the Image Validation, Image Utilities, and Image Handling software units (all are located in the JEDMICS/CADA executable directory). In addition, recognition files output from the ICR engine from within the ID software unit are also created. These include the files named *title.zrf* and *assoc.zrf* (these are kept in the data set directory) as well as *approach3.zrf*, *approach4.zrf*, *string.zrf* (located in the JEDMICS/CADA executable directory). The Evaluation run events are written to the *cada.log* and *batch_number.log* files.

As stated before, security becomes an issue since a user with the proper privileges could inspect, copy, remove, or modify any of these files.

3.10.4 Output Reports

At the end of the evaluation run, a Batch Evaluation Summary window indicates the number of images in the batch that have been accepted or rejected. This specific information is not stored as regular ASCII file like other reports. It is information extracted from the *dataset.master* index file.

3.10.5 Reproduced Output Reports

There are no reports to reproduce as a result of the Evaluation run.

3.10.6 Restart/Recovery Procedures

An evaluation may be stopped at any time during a run. This action will produce indeterminate partial results. A user may restart an evaluation for a batch at any time. This action will destroy all previous evaluation results which include any user overrides.

3.11 View

The View run provides various methods of allowing a user to view all or a subset of the images in an active batch. Several functions are also provided to help the user perform a variety of QA tasks.

3.11.1 Control Inputs

The control inputs for this run are used to establish the view list criteria, override an image's evaluation status or change its key ID data, enter descriptive notes about an image, dictate how an image will be displayed, and print an image.

By using the View All, Sort By..., or From Image List commands from the main workspace, the user can specify what set of images should be viewed during a QA session. Once in the visual QA workspace, the user can input a new evaluation status value for a drawing based upon the content of the displayed image using department QA standards. New key ID data can also be input for a drawing if the information in the drawing is found to be incorrect. Notes of up to 255 characters can be associated with the image. This input will show up in the evaluation status report. Commands in the visual QA workspace also allow the user to control how an image is displayed and move forwards/backwards through the drawings in the batch.

3.11.2 Management Information

The View run can only be initiated from within JEDMICS/CADA through its GUI. Users can display/modify the Hollerith data for an image, override an image's evaluation status, display a revision sheet grid for a document in the batch, add a descriptive note to an image that will show up in an evaluation status report, dictate how an image will be displayed, and print an image. Refer to Sections 4.3.7 through 4.3.9 of the End User Manual for further information. Table 4 shows typical times to display images for various View run functions.

Table 4. Typical View Run Performance Times

FUNCTION	A SIZE	B SIZE	C SIZE	D SIZE	E SIZE
Fit to Window	0:01	0:01	0:01	0:01	0:02
Full Scale	0:01	0:01	0:02	0:03	0:03
One to One	0:02	0:02	0:02	0:04	0:06
Corner Zone	0:01	0:02	0:02	0:02	0:02

Once the user defines what list of images will be available for display in the visual QA workspace, there are no major check points or specific sequence of events. The user can perform the functions specified in Sections 4.3.1.4 through 4.3.1.6 of the End User Manual in any order desired. The user will only be asked to confirm a modification of the key ID data of an image or termination of the View run.

3.11.3 Input-Output Files

JEDMICS/CADA gets input from the *batch_number.lst* (maintains information about each file in a batch) index file to populate fields that display current information about an image.

JEDMICS/CADA may update the *batch_number.lst* file during View run. The data updated would include user overrides of automated results, entry of user notes, view status, and modification of header information.

As images are viewed, the raster file is converted to a temporary TIFF file that is used for image display. If the user prints an image, a temporary TIFF file that is scaled and rotated to fit specified page dimensions is created and spooled to the printer as a PostScript file. These files are automatically removed after they are used to conserve disk space. The View run events are written to the *cada.log* and *batch_number.log* files.

3.11.4 Output Reports

There are no reports produced as a result of the View run.

3.11.5 Reproduced Output Reports

There are no reports to reproduce as a result of the View run.

3.11.6 Restart/Recovery Procedures

A user may restart a View run at any time. This can be accomplished by starting a new view session or by resuming the last view session.

3.12 Report

The Report run allows a user to generate and then view or print the current Evaluation Status, Batch Data List, Integrity, and Pending Status reports for active batch.

3.12.1 Control Inputs

Once the user has specified what report to output, he or she then has the option of displaying or printing the report. No other inputs are required for this run.

3.12.2 Management Information

The Report run can only be initiated from within JEDMICS/CADA through its GUI. Once the user has specified what report to output, the user only needs to choose whether to display or print the report. If a closed batch report is specified, the user can choose to display or print either a Evaluation Status or Batch Data List report from a batch that has been previously unloaded. The naming convention used for the report names are: *batch_number.report_type* where the *report_type* is either *cls* for an Evaluation Status report, *lst* for a Batch Data List report, *img* for an Image Integrity report, or *.psr* for a Pending Status report. Table 5 shows typical times for printing reports.

Table 5. Typical Report Run Performance Times

CATEGORY	FUNCTION	NO OF IMAGES	TIME (IN MINUTES:SECONDS)
REPORT GENERATION	Evaluation	100	0:04
	Report Display		
	Evaluation	3 pgs	0:50 (until output is complete)
	Report Print		
	Batch Data List	100	0:08
	Display		
	Batch Data List	3 pgs	1:02 (until output is complete)
	Print		
	Image Integrity	100	0:05
	Report Display		
	Image Integrity	2 pgs	0:35
	Report Print		
	Pending Status	100	0:05
	Report		
	Display Print	1 pg	0:25

3.12.3 Input-Output Files

The Report will output a Evaluation Status or Batch Data List report depending on the user selection. Input to generate the Evaluation status or Batch Data List reports is obtained from the *dataset.master* and *batch_number.lst* files. If a closed batch report is specified, no output is generated. Input for this report is from a previously generated report file located in a specified log files directory.

3.12.4 Output Reports

The output reports produced are Evaluation Status, Batch Data List, Integrity, and Pending Status.

3.12.5 Reproduced Output Reports

The reports are ASCII files that can be output to a printer for hardcopy output.

3.12.6 Restart/Recovery Procedures

A user may restart a Report run at any time. There are no recovery procedures for this run.

3.13 Output

The Output run allows a user to output CALS input data to a directory or tape and JEDMICS Pending input data to JEDMICS pending.

3.13.1 Control Inputs

CALS Output

The user will need to input text for the new *srcsys:* and *dstsys:* fields for the image files. The *srcdocid:* field format must also be specified to take one of the following formats: MIL-STD-1840A H, MIL-STD-1840A T, MIL-STD-1840B H, MIL-STD-1840B T, or MICOM Aperture Card. The user then should select the output set (all images, all accepted, or all rejected). Output of a batch subset (all accepted or rejected) requires an automated evaluation prior to this operation.

If outputting data to a tape, the following information must be input to JEDMICS/CADA: number of tapes and tape density. If outputting data to a directory, the full path of the output directory must be specified.

Pending Output

If the data source was JEDMICS Pending, the batch may be output to Pending. This output will automatically occur after evaluation if automatic-run is ON. If automatic-run is OFF the BATCH>Output>Pending menu section will output to Pending. When the batch is output, the new batch ID is logged in the Pending Status Report.

3.13.2 Management Information

The Output run can only be initiated from within JEDMICS/CADA through its GUI. The Output run time depends on the size of the batch to be loaded. Table 6 shows typical output times to a HP 9-track tape drive and a directory. At the time of this report timing runs from Output to Pending was not available.

Table 6. Typical Output Run Performance Times

CATEGORY	FUNCTION	NO OF IMAGES	TIME (IN MINUTES:SECONDS)
OUTPUT	Directory	5	0:01
		100	0:28
	Tape	5	0:55
		100	9:00

The Output run can be terminated by clicking [Cancel] at any one of the following check points: JEDMICS/CADA output information Window and the Batch Input/Output Window.

CALS Input During this Output run, the peripheral and resource requirements include a 9-track tape drive if outputting to a tape or an output directory with enough free disk space on the drive volume where the directory resides. There must also be enough free disk space on the specified (output) mounted drive volume to store the temporary files created during this process (typically twice the size of the loaded batch). The temporary files are removed once the batch has been output. The JEDMICS/CADA status window displays how much disk space the batch occupies.

JEDMICS Pending Output: During this output run, a connection to a JEDMICS Pending data base and an account with Pending write access privileges is required.

3.13.3 Input-Output Files

Temporary files are created during the Output to Tape run. The temporary files have the new Hollerith, *srcsys:*, and *dtssys:* field information. Once temporary files with changes are created they are output to tape. The temporary files are removed once the batch output has been completed. JEDMICS/CADA outputs CALS-compliant data to the specified tape or directory. The Output run events are written to the *cada.log* and *batch_number.log* files.

3.13.4 Output Reports

There are no reports produced as a result of the Output run. If output occurs to Pending, the contents of the Pending Status report will be updated.

3.13.5 Reproduced Output Reports

There are no reports to reproduce as a result of the Output run.

3.13.6 Restart/Recovery Procedures

If the Output run fails due to insufficient disk space, the user should exit JEDMICS/CADA, make the necessary disk space available, and restart JEDMICS/CADA to initiate the run again.

3.14 Reset Datasets

This run is initiated by selecting Reset Datasets from the Options Housekeeping sub-menu and will delete all loaded data sets and reset the data set numbering to 1. It is recommended that this script be run when the data set number approaches 999.

3.14.1 Control Inputs

The *reset_datasets* option script requires that the environment variable *\$MYCADAHOME* be correctly set prior to execution. The user needs to only confirm the execution of the command when prompted with *[Press y to continue:]*.

3.14.2 Management Information

Reset_datasets will change to the *\$MYCADAHOME/data* directory, recursively remove the contents, and reset a clean directory structure with initialized files. The user is prompted for a confirmation prior to deletion.

If the *\$MYCADAHOME/data* directory does not exist, *reset_datasets* will indicate the error and exit gracefully.

There was a problem switching to the *<\$MYCADAHOME/data>* directory.
Please check your *<.cshrc>* file in your home directory to make sure the
MYCADAHOME environment variable is specified correctly

Figure 5. *reset_datasets* run Error

The operator should be aware that *reset_datasets* does not check that the *\$MYCADAHOME/data* directory is valid once it is found. Once the directory is found and the user answers yes at the *[Press y to continue:]* prompt, the contents of the directory will be removed whether or not it is a JEDMICS/CADA data directory.

3.14.3 Input-Output Files

There are no input files produced as a result of the Reset Datasets run. The standard JEDMICS/CADA data directory structure and new *dataset.master/dataset.num* files will be created.

3.14.4 Output Reports

There are no reports produced as a result of the Reset Datasets run.

3.14.5 Reproduced Output Reports

There are no reports to reproduce as a result of the Reset Datasets run.

3.14.6 Restart/Recovery Procedures

There are no restart/recovery procedures for this run.

3.15 Backup the Feedback Directory and Clean the Backup Directory (Backup/Clean)

This run is a Unix shell script which has options to perform output/backup of the feedback directory and removal of old files in the backup directory.

3.15.1 Control Inputs

Once the script has been started, the user can input one of three options: *Dump the JEDMICS/CADA results, clean the fb_backup directory, or quit.*

<p>Do you wish to:</p> <ul style="list-style-type: none">1) Dump the JEDMICS/CADA results (feedback directory) to a floppy disk or file.2) Clean the fb_backup directory.3) Quit the dump_results program. <p>Enter the desired menu number:</p>

Figure 6. Options for the *dump_results* script

If the *Dump the JEDMICS/CADA results* option is selected, the user will need to input text relating to where the feedback information has been generated. After this, the user must specify where the output of the directory should go: either to a file or to a device such as the tape or floppy drive. If the *Clean the fb_backup directory* option is selected, the user will need to confirm the execution of this operation two times.

The *dump_results* shell script requires that the environment variable *\$MYCADAHOME* be correctly set prior to execution. If the *\$MYCADAHOME/bin* directory does not exist, *dump_results* will indicate the error and exit gracefully.

<p>There was a problem switching to the <i><\$MYCADAHOME/bin></i> directory. Please check your <i><.cshrc></i> file in your home directory to make sure the MYCADAHOME environment variable is specified correctly</p>

Figure 7. *dump_results* Error

3.15.2 Management Information

The Backup/Clean run can only be initiated from the Unix command line. The Dump the JEDMICS/CADA results option will dump the contents of the feedback directory to a floppy disk or file. The feedback directory includes *cada.log*, *batch.log*, evaluation status report, and batch data list report files. The dump results should be made when it is necessary to provide input to development personnel. After invoking this option the user must answer questions relating to the site where this information has been generated.

Please specify your test site name:
Please specify your name:
Please specify the test set number:
Please specify your phone number:

Figure 8. Questions for Site Information Input

This site information along with the submission date is written to a file named:

\$MYCADAHOME/bin/feedback/test_site.info.

This file will be included in the dump output. The script will then prompt the user to specify if the feedback directory should be output to a file or to a device such as the floppy drive.

If you are dumping the results to the floppy disk
please make sure you have inserted a floppy disk

The floppy drive */dev/rfd0* is the default output destination

Press [RETURN] for the default or specify an output device or file:

Figure 9. Specification of Output

At this point the script will dump the output and back-up the contents of the feedback directory to the *fb_backup* directory. If problems occur one of the following messages will be displayed.

There was a problem dumping the results to *<\$output_file>*.
Please check *<\$output_file>* to make sure it is a valid output device
or file

Figure 10. Output Error

The JEDMICS/CADA results have been output to *\$output_file*.

There was a problem backing up the results to the *fb_backup* directory.

Figure 11. Backup Error

After the feedback directory has been dumped, if the backup is successful all feedback files will be deleted.

The Clean the *fb_backup* directory option will delete all backup feedback archive files in the *\$MYCADAHOME/bin/fb_backup* directory older than 30 days. It is recommended that this option be run periodically to reclaim disk space. Figure 12 shows a typical Clean run with user input in bold text.

WARNING!!!

This operation will remove the feedback backup files in the
<*\$MYCADAHOME/fb_backup*> directory

Do you want to continue (y/n): **y**

Are you sure you want to perform this action (y/n): **y**

Figure 12. Clean *fb_backup* Directory

During the Backup/Clean run the peripheral and resource requirements include a floppy or tape drive if outputting to a device. Enough free disk space on the mounted drive volume where the feedback archive will be stored is required if output to a file has been specified.

3.15.3 Input-Output Files

There are no input files produced as a result of the Backup run.

3.15.4 Output Reports

There are no reports produced as a result of the Backup run.

3.15.5 Reproduced Output Reports

There are no reports to reproduce as a result of the Backup run.

3.15.6 Restart/Recovery Procedures

There are no restart/recovery procedures for this run.

APPENDIX A

Typical JEDMICS/CADA Performance Times

Performance of the JEDMICS/CADA software is dependent on several factors. The most important is the processor speed and amount of Random Access Memory (RAM) installed in the workstation. The Central Processing Unit (CPU) and memory-intensive operations of the automated evaluation and decompression of images for viewing are greatly affected by these two factors. The number of processes running on the machine will also effect system performance. It is suggested that JEDMICS/CADA's automated evaluations be run when the load on the system is low.

The size and content of the images in a batch also affect system throughput. Larger size drawings such as D and E size images take longer to evaluate and to decompress than A size images since there is approximately nine to 16 times more data to process. Poor quality Raster data takes longer to evaluate since JEDMICS/CADA will try several approaches to perform ID OCR verification. If JEDMICS/CADA is used remotely, display performance will be degraded since X windows data is sent over a channel that may have low bandwidth and/or high network traffic. A synopsis of JEDMICS/CADA operations follows in Section 3.2.

The following table specifies the typical performance of major areas of JEDMICS/CADA using the specified baseline system.

- Sun SPARCstation compatible with 150 MHz Sparc CPU and 64 MB of RAM
- 2 GB SCSI Hard Disk with 11ms access time
- High Resolution Pixelink Monitor (1600x1280) with GXtra SBus video card for X windows display
- Sun OS 4.1.4 with OpenWindows version 3
- Hewlett-Packard 9-track $\frac{1}{2}$ inch tape drive with 1600 or 6250 CPI read/write capabilities
- PostScript laser printer with 5ppm or faster rating

Table A-1. Typical Performance Times

CATEGORY	FUNCTION	NO OF IMAGES OR IMAGE SIZE	TIME (IN MINUTES:SECONDS)
INPUT	Directory	5	0:12
		100	1:38
	Tape	5	0:37
		100	5:02
	JEDMICS Permanent (Query)	100	9:05
	JEDMICS Permanent (Load)	100	3:30
	JEDMICS Pending (Query)	100	0:06
	JEDMICS Pending (Load)	100	3:40
	AUTOMATED EVALUATION Image Only (Entire Image)	5	0:10
		100	3:41
	AUTOMATED EVALUATION Image Only (Within Borders)	5	1:07
		100	31:21
AUTOMATED EVALUATION	Image Validation, ID	5	2:32
		100	46:05
DISPLAY IMAGE LIST	With Alpha Numeric Sort, Document count and Image Size count	100	0:02
		100	
OUTPUT	Directory	5	0:01
		100	0:28
	Tape	5	0:55
		100	9:00

The sample batches used for the performance times consisted of five or 100 images of varying image size and quality..

APPENDIX B

The JEDMICS/CADA Configuration File: *cada.config*

The JEDMICS/CADA default parameters may be changed by editing the "*cada.config*" file using the vi text editor or setting options using the configuration windows from within JEDMICS/CADA.

Table B-1. Valid Keywords and Values for a *cada.config* File

CATEGORY	KEYWORD	VALID VALUES
JEDMICS/CADA	Data_dir	any writable directory
Directories	Log_dir	any writable directory
	Admin_dir	any writable directory, defaults to LOG_DIR when not set
	Output_Dir	any writable directory
	Cals_Directory	any readable directory
Devices	Tape	a valid /dev/??? tape device name
	Tape_density	1600 or 6250
	Printer	a valid /dev/??? printer device name
	Printer_resolution	$200 \leq X < 600$
	Page_width	$5.0 \leq X < 10.5$
	Page_height	$5.0 \leq X < 16.5$
Misc	Min_accept_pct	$0.0 \leq X < 100.0$
	Developer_feedback	On or Off
	Alpha_Numeric_Sort	On or Off
	Initial_view	Fit, Full, One2One, Zones
Image Quality	IMG_Q_Approach	Legacy, Strict, Light
	Check Quality	Within, Entire
Image Validation	Run_Validation	On or Off
	Border_Algorithm	Hough or ScanFix
	Min_doc_dim	$70.0 \leq X < 100.0$
	Max_doc_dim	$100.0 \leq X < 130.0$
ID Validation	Run_ID	On or Off
	Check_special_rev	On or Off
	Check_cage	On or Off
	Allow_empty_sheet	On or Off
Intelligent Rotation	Intelligent_Rotation	On or Off
	Default_Rotation	0, 90, 180, 270

These options control various aspects of JEDMICS/CADA's operation such as where data and log files are stored, automated evaluation parameters, and device locations/configurations. There are two configuration windows: an evaluation specific window and another that handles all other options. The windows can be accessed by using the Configure Application or Configure Evaluation commands. Detailed information about the effect and use of each option is shown in Table B-1. Descriptions about the options follow.

1. DIRECTORIES:

CADA Batch Data Files Directory (Data_dir: any writable directory): A writable directory that contains the data sets loaded into JEDMICS/CADA.

CADA Log Files Directory (Log_dir: any writable directory): A writable directory that contains the log information stored by JEDMICS/CADA.

CADA Administrative Files Directory (Admin_dir: any writable directory, defaults to LOG_DIR when not set): A writable directory that contains the log information stored by JEDMICS/CADA.

CALS Temporary Output Directory (Output_Dir: any writable directory): A writable directory that serves as the temporary storage for CALS files that will be output to tape.

CALS Source Directory (Cals_Directory: any readable directory): A readable directory that contains the image data set to be loaded into JEDMICS/CADA. These have to be valid directories on the machine and must contain the header and raster image files in the MIL-STD-1840 CALS-compliant format. Up to 10 directories can be specified.

2. DEVICES:

Tape Device: (Tape: a valid /dev/??? tape device name): This parameter specifies the device path name of the 9-track tape drive JEDMICS/CADA uses for input and output of CALS data.

Tape Device Output and Input Tape Density: (Tape_density: 1600 or 6250): This parameter specifies the input and output tape densities JEDMICS/CADA will use to load or output CALS data to a 9-track tape device.

Printer: (Printer: a valid /dev/??? printer device name): This parameter specifies the device path name of the PostScript printer JEDMICS/CADA will use to print reports and images.

Printer Resolution: (Printer_resolution: $200 < X \leq 600$): This parameter specifies the device JEDMICS/CADA will use to print reports and images.

Printer Page Area Width Dimension: (Page_width: $5.0 \leq X \leq 10.5$): This parameter specifies the maximum page width JEDMICS/CADA will use to print images.

Printer Page Area Height Dimension: (Page_height: $5.0 \leq X \leq 16.5$): This parameter specifies the maximum page height JEDMICS/CADA will use to print images.

3. IMAGE QUALITY:

Image Quality Approach: (IMG_Q_Approach: Legacy, or Strict): This parameter specifies the image quality thresholds JEDMICS/CADA will use to evaluate images in a batch.

Image Quality Check: (Check_Quality: Entire, or Within): This parameter specifies if image quality evaluation is done for the entire image or just within found border.

4. IMAGE VALIDATION:

Run IMG Validation Checks: (Run_Validation: On or Off): This parameter determines whether JEDMICS/CADA will perform image validation during an automated evaluation. Image validation consists of checking the image size, skew correction, and border location. If RUN_ID parameter is TRUE, then this parameter is defaulted to ON and validation is always performed.

Border Location Algorithm: (Border_Algorithm: Hough or ScanFix): System parameter for internal use. Please do not modify.

Minimum Underscan Percentage: (Min_doc_dim: $70.0 < X < 100.0$): This is the minimum acceptable image size as a percentage of the nominal dimension specified in ANSI Y14.1.

Maximum Overscan Percentage: (Max_doc_dim: $100.0 < X < 130.0$): This is the maximum acceptable image size as a percentage of the nominal dimensions specified in ANSI Y14.1.

5. ID VALIDATION:

Run ID Validation Checks: (Run_ID: On or Off): If set to ON, the ID Validation is performed on the batch during an evaluation.

Check for Special Revision Block during ID Validation: (Check_special_rev: On or Off): If set to ON, JEDMICS/CADA checks for a separate revision block offset from the top border if the revision level cannot be found in the title block.

Check for CAGE Code during ID Validation: (Check_cage: On or Off): If set to ON, the CAGE code is checked during ID Validation.

Allow an empty sheet box during ID Validation: (Allow_empty_sheet: On or Off): If set to ON, it allows for an image to pass ID Validation if the first sheet of a document does not have sheet number 1 in the title block.

6. MISC:

Alpha-Numeric Sorting: (Alpha_Numeric_Sort: On or Off): JEDMICS/CADA will display, list, or report loaded images in either "as received order" or "alpha numeric sort order." This ordering is based on the image index (drawing number, drawing type, sheet number, and revision). This sorting can be toggled at any time from the Configuration Application window which is accessed via the Configuration Menu. Setting the Alpha Numeric Sort to On will cause the alpha numeric sort ordering to be used while viewing images, viewing the Batch Data List, generation of the Evaluation Report, and generation of the Batch Data List Report. If the Alpha Numeric Sort is Off, the images will then appear in the order in which they were found in the delivery set.

Initial View in Visual QA Workspace: (Initial_view: FIT, FULL, ONE2ONE, or ZONES): This parameter determines what initial view JEDMICS/CADA will display images in the Visual QA workspace. The different parameters are FIT (Fit to Window), FULL (Full Scale), ONE2ONE (One to One Pixel mapping), and ZONES (Corner Zones).

Query Hit Limit	jmx_image_hit_limit
Maximum Sub-batch size	max_jmx_batch_out
Automatic Run for Evaluation	automatic_run
Automatic Printing for Reports	automatic_print
Evaluation Report Style	eval_report_style

The *cada.config* File: The keyword-value combinations do not have to be in a specific order or grouping. JEDMICS/CADA is case insensitive when interpreting the keywords. The values are case sensitive since they may contain directory or device name paths. The keywords must be separated from their value(s) by a colon (e.g., Initial_View: FULL). JEDMICS/CADA can also handle leading and trailing white space around keywords and values. Any incorrectly formatted lines in the config file are identified by line number and default settings are used if possible. An incorrect Admin_Dir, Data_Dir, Log_Dir, or tape drive device name will cause JEDMICS/CADA to gracefully exit. Lines beginning with a "%" or "#" are treated as comments and are ignored. Blank lines are also ignored. A typical *cada.config* file is shown in the Figure B-1.

```
%CADA_DIRECTORIES
DATA_DIR:                /home/cada/cecom/data/dat
LOG_DIR:                 /home/cada/cecom/data/log
ADMIN_DIR:              /home/cada/cecom/data/log
TAPE_OUTPUT_DIR:        /home/cada/cecom/tape_output
DIR_OUTPUT_DIR:         /home/cada/cecom/tape_output

%CALC SOURCE DIRECTORIES
CALC_DIRECTORY:         /home/cada/datasets/A2L-test
CALC_DIRECTORY:         /home/cada/datasets/A2L-test
CALC_DIRECTORY:         /home/cada/datasets/norev
CALC_DIRECTORY:         /home/cada/datasets/ID_test
CALC_DIRECTORY:         /home/cada/datasets/QC_test
CALC_DIRECTORY:         /home/cada/datasets/sherry_demo

% DEVICES
TAPE:                   /dev/rst17
TAPE_DENSITY            6250
PRINTER:               /dev/lp
PRINTER_RESOLUTION:    300
PAGE_WIDTH:            8.0
PAGE_HEIGHT            10.5
AUDIO:                 OFF

%MISC A
MIN_ACCEPT_PCT:         98.0
ALPHA_NUMERIC_SORT:     OFF
DEVELOPER_FEEDBACK:     ON
INITIAL_VIEW:           FIT
DISPLAY_STATUS:         OFF

%IMG QUALITY
IMG_Q_APPROACH:         STRICT
CHECK_QUALITY           WITHIN

%IMG VALIDATION
RUN_VALIDATION:         ON
BORDER_ALGORITHM        HOUGH
MIN_DOC_DIM:            70.0
MAX_DOC_DIM:            130.0

%ID VALIDATION
RUN_ID:                 OFF
CHECK_SPECIAL_REV:      ON
CHECK_CAGE:             ON
ALLOW_EMPTY_SHEET:     ON
IGNORE_REV_ZONE:        ON

%ROTATION
INTELLIGENT_ROTATION:   ON
DEFAULT_ROTATION        0

%MISC B
MAX_JMX_BATCH_CNT:      100
AUTOMATIC_RUN:          OFF
AUTOMATIC_PRINT:        OFF
EVAL_REPORT_STYLE       FULL
JMX_IMAGE_HIT_LIMIT:    1000
```

Figure B-1. Typical *cada.config* File

7. ROTATION:

These options pertain to data received from a JEDMICS source. They are needed during evaluation in order to determine the correct orientation of the images.

Intelligent_Rotation: Intelligent_Rotation can be set to ON or OFF. If OFF, the rotation of the image upon receipt by JEDMICS/CADA will be used.

Default_Rotation: (0, 90, 180, or 270)Default_Rotation will be used as the starting rotation if Intelligent_Rotation is ON. From a JEDMICS scanned source, the default rotation should be set to 90. (If the Default_Rotation does not yield the proper rotation, JEDMICS/CADA will proceed to find the correct rotation.)

APPENDIX C

Commercial-Off-The-Shelf (COTS) Products

In order to use the JEDMICS/CADA executable software package, it is required that run-time licenses be obtained for use of the COTS products. It is unlawful to use this package without obtaining the licenses. The Government does not endorse these COTS products and they may be used at the discretion of the user. Other equivalent COTS products may be substituted upon obtaining the source code from the Government. The COTS products that are incorporated into the JEDMICS/CADA executable software are shown below. The licenses may be obtained from IC&G Systems, the OEM distributor, for these products for use in JEDMICS/CADA or directly from the vendors.

APPLICATION	PRODUCT	VENDOR
OCR/ICR Software	NestorReader™ Part No. NR-CADA	NCS™ Recognition Products One Richmond Square Providence, RI 02906 : David P. Wright
Imaging Library 1	ScanFix™ Part No. JEDMICS/CADA-SF	TMMSequoia
Imaging Library 2	UniSoft Imaging Library Part No. USCADA-V6	Unisoft Imaging 4606 N. Britton Road Stillwater, OK 74075 Attn: Calvin Aiken

Source for Licenses: Integrated Computer & Graphics Systems
PO BOX 4221
Highlands Ranch, CO 80126
(303) 470-7262 (Tel or Fax)

Disclaimer: The use of these COTS products does not constitute an endorsement or approval of their use. This software may not be cited for the purpose of advertisement. Any of these products may be replaced by equivalent products due to the availability of the CADA source code.